

Financial management and financial performance: A case study of Deposit Money Bank (DMB) in Nigerian

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Abstract

Deposit Money Banks (DMBs) play a crucial role in a nation's financial and economic stability. They work as intermediaries, procuring funds from many sources, especially savers and depositors, and allocating them to various sectors of the economy that necessitate financial support for their operations. The performance of the specified Deposit Money Banks in Nigeria is asymmetrical, reflecting the differing capacities of each bank to effectively navigate, manage, and align itself for profitability. Sequel to this, this study aims to evaluate the effects of credit management on financial performance of Deposit Money Banks (DMBs) in Nigeria. The population was 21 Deposit Money Banks as per Central Bank Statistical Bulletin of January 2018. Using purposive sampling technique, fourteen (14) banks were selected as the sample subjects. The validity and reliability were based on the statutory audit of their financial statement approved for use by CBN. The study adopted descriptive and inferential (regression) statistics in data analysis. The findings revealed that: credit management has significant effect on financial performance of Deposit Money Banks in Nigeria with (ROCE: Adjusted $R^2=0.4196$; Wald(4)=241.2; $p<0.05$) but insignificant effect on DPRS (Adjusted $R^2=0.028$; $F(4,170)=2.26$; $p>0.05$); credit management with controlling effect of bank size and total revenue has significant effect on financial performance of Deposit Money Banks in Nigeria (ROCE: Adjusted $R^2=0.4311$; Wald(6)=321.95; $p<0.05$, DPRS: Adjusted $R^2=0.4178$; $F(4,170)=11.07$; $p<0.05$); Specifically, the study revealed that nonperforming loan has significant negative effect on financial performance (ROCE: $R^2=0.059$, $\beta=0.026$, $p<0.05$; DPRS: $R^2=0.04$, $\beta=-0.005$, $p<0.05$); capital adequacy ratio has significant positive effect on financial performance (ROCE: $R^2=0.14$, $\beta=0.063$, $p<0.05$; DPRS: $R^2=0.022$, $\beta=0.005$, $p<0.05$); loan loss provision disclosed significant positive influence on ROCE ($R^2=0.25$, $\beta=0.178$, $p<0.05$), but insignificant positive effect on DPRS ($R^2=0.012$, $\beta=0.008$, $p>0.05$); loan to deposit ratio exerted insignificant positive effect on financial performance (ROCE: $R^2=0.0194$, $\beta=0.026$, $p>0.05$; DPRS: $R^2=0.01$, $\beta=0.003$, $p>0.05$). The study concluded that credit management influences the financial performance of Deposit Money Banks in Nigeria. The study recommended that the management of deposit money banks in Nigeria should formulate and uphold a comprehensive credit management strategy and framework, together with a rigorous credit policy, to reduce non-performing loans and default rates, thereby enhancing their performance levels.

Keywords: Financial management, Financial performance, Deposit money bank

Introduction

Deposit Money Banks (DMBs) play a crucial role in a nation's financial and economic stability. They work as intermediaries, procuring funds from many sources, especially savers and depositors, and allocating them to various sectors of the economy that necessitate financial support for their operations. Consequently, by enabling the allocation of credit from received deposits to finance borrowers' investments, banks serve as middlemen between depositors (savers) and borrowers. Banks may obtain a superior interest rate in return. (Kasali and Fahanu, 2020; Mercy et al., 2018; Ogboi and Unuafé, 2013). Banks remain the primary suppliers of credit in domestic markets, especially in emerging economies, due to the fragility of capital markets and the absence of adequate funding sources. Risk management is crucial for the profitability and sustainability of institutions. Abdel-Basset et al.

(2019) defined banking as a perilous enterprise. The banking sector entails considerable risk-taking, as noted by Festus and Olaniyan (2022), particularly in emerging countries with fragile economies. Bouteille and Coogan-Pushner (2021) identify the risks associated with DMBs as solvency risk, market risk, foreign exchange risk, and liquidity risk. Credit risk is the paramount risk among all of these (Hambolu et al., 2022; Abobari et al., 2018; Angela, 2016).

The performance of the specified Deposit Money Banks in Nigeria is asymmetrical, reflecting the differing capacities of each bank to effectively navigate, manage, and align itself for profitability. Deposit Money Banks in Nigeria have statistically reported declining profitability mostly during the past decade, despite substantial financial investments (Agbomian & Akinlosotu, 2017). Subpar performance in financial institutions may yield catastrophic repercussions for a rising economy. Efficient credit management is crucial for

organizational performance. The net interest margin serves as the proxy for financial performance, considering its interaction with credit management systems. Macmillian et al. (2018) observed that Net Interest Margin (NIM) quantifies the net returns linked to banks' earning assets. This measure considers just productive assets, excluding all others.

Credit risk is regarded as a significant concern due to its propensity to elevate the debt levels of deposit money banks (Maness & Zietlow, 2015). Elevated debt levels may compel deposit money banks to incur further borrowing to satisfy demand, particularly from clients who may withdraw funds. This situation leads to heightened interest payments, increased equity, diminished shareholder value, reduced future capital investments, a loss in borrowing capacity, and decreased profitability. A decrease in borrowers will consequently restrict the long-term performance of banks and extend the period of trade credit acquired from suppliers (Saeed & Zahid 2016) (Abiola & Olausi, 2014).

Deposit Money Banks are financial entities authorized by regulatory authorities to collect deposits from surplus units and allocate these funds as loans to deficit units, while also providing various financial services. Deposit money banks are resident depository corporations and quasi-corporations that possess liabilities in the form of deposits that are payable on demand, transferable by cheque, or otherwise applicable for making payments (Gestel & Baensens, 2009; Krugman, 2009). They are profit-oriented entities serving as mediators between borrowers and lenders, acquiring temporarily accessible resources from businesses and individuals, and providing loans to those requiring financial assistance. This study investigates the relationship between credit management and financial performance, focusing on Deposit Money Banks (DMBs) in Nigeria.

Literature Review

Sujeewa (2015) analyzed the influence of credit risk management on the performance of commercial banks in Sri Lanka. The study utilized panel data from 2009 to 2013 and demonstrated that non-performing loans negatively affect banks' profitability, as measured by ROA.

Sahiti, Ahmeti, & Aliu (2018) conducted a quantitative analysis of the impact of risk management on the profitability of banks in Kosovo, utilizing return on equity as a performance proxy. Findings indicated a significant correlation among factors, demonstrating that an increased risk asset ratio leads to a slight decrease in profitability, whereas a larger level of non-performing loans exerts a favorable and more pronounced impact on profitability.

Imad (2017) examined the influence of credit risk on the profitability of five banks in Palestine. Profitability was assessed using return on equity and return on assets, while credit risk was evaluated using net charge-offs relative to total loans and advances, non-performing loans as a proportion of total loans and advances, and pre-provision profit in relation to total loans and advances. The study identified a weak yet positive correlation between credit risk and bank profitability.

Evidence from prior studies is also present in Nigeria. The research conducted by Kolapo, Ayeni, and Oke (2012) employed panel data analysis to examine the impact of credit risk on the performance of banks. Return on Assets (ROA) was employed as an indicator of performance. The study revealed that a rise in non-performing loans or provisions for loan losses reduces profitability (ROA), whereas an increase in total loans and advances boosts profitability. Taiwo and Abayomi (2013) employed Panel Least Squares (PLS) regression to assess the influence of credit risk management on the profitability of banks in Nigeria. The research revealed that credit risk management significantly influences the profitability of Nigerian banks. Alalade, Binuyo, and Oguntodu (2014) investigated the influence of credit risk management on the profitability of banks in Lagos State. The findings indicated that credit risk diminishes profitability. Uwalonwa, Uwuigbe, and Oyewo (2015) conducted a critical evaluation of the impact of credit management on the performance of banks in Nigeria. The research exclusively examined publicly traded banks from 2007 to 2011. The findings indicated that the ratio of non-performing loans and bad debt adversely impacted the performance of banks in Nigeria, however the ratios of secured and unsecured loans did not significantly affect bank performance.

Available research in Nigeria have clearly concentrated on the relationship between credit risk management and bank profitability. These studies, however, assessed the impact of credit risk on bank profitability using a homogeneous panel regression method, specifically the ordinary least squares regression, which presumes that all panel members are homogeneous, as referenced in Taiwo & Abayomi (2013) and Uwalonwa, Uwuigbe, & Oyewo (2015), among others. This, however, may not be accurate, as there is typically a level of variation across deposit money banks, notably in Nigeria. Utilizing such an approach in the presence of heterogeneity among panel members might bring bias into the results. This study addresses the methodological issue and fills the literature gap by analyzing the effect of credit risk management on the profitability of deposit money banks in Nigeria within a heterogeneous panel framework to eliminate potential biases in prior research findings. This study differentiates itself from others by comprehensively evaluating profitability in banks, hence incorporating net operating income (NOI) in addition to ROA and ROE to assess bank profitability in Nigeria. Net operational income is posited to represent the earnings of deposit money institutions derived from their core banking operations (Ghebregiorgis & Atewebhran, 2016).

Nyabicha (2017) analyzed the impact of credit risk management on the financial performance of commercial banks listed on the Nairobi Securities Exchange, Kenya. The study aims to ascertain whether a substantial link exists between capital adequacy ratio, loss given default, loan loss provision, non-performing loans, and bank stock performance in Kenya. Secondary data was gathered from 44 commercial banks in Kenya for the period spanning 2008 to 2014. The panel estimate generalized that least squares regression was employed to analyze the secondary data. The study indicated that there is no substantial correlation between capital adequacy ratio, loss given default, loan loss provision, and bank stock performance in Kenya. It also disclosed a statistically adverse correlation between the nonperforming loan ratio and bank stock performance in Kenya.

Mogga, Mwambia, and Kithinji (2018) examined the impact of credit risk management on the financial performance of commercial banks in Juba City, South

Sudan. The study utilized primary data obtained through questionnaires to gather information. The focus was on risk identification, risk monitoring, risk analysis, and evaluation as instruments of risk management and their impact on the financial performance of banks in Juba City. SPSS was employed to analyze data collected from six banks. The study revealed that risk identification significantly impacts the financial performance of banks, whereas risk analysis and assessment have an insignificant effect on financial performance.

Kipkirui and Omagwa (2018) investigated the relationship between Credit Management Practices and the Financial Performance of Microfinance Institutions in Nairobi's central business area, Kenya. They aimed to ascertain the impact of client appraisal, credit risk collection policy, and credit terms on the financial performance of microfinance institutions in Kenya. The research utilized primary data collected through questionnaires. Multiple regression was conducted using 158 questionnaires. The study concluded that enhancements in credit risk management, client evaluation, collection policies, and credit terms will bolster the financial standing of microfinance banks.

Gadzo, Oduro, and Asiedu (2019) investigated the influence of credit risk on business financial performance. Secondary data were obtained from banks listed on the Ghana Stock Exchange. The study demonstrated that capital adequacy, operating efficiency, profitability, and net interest have an inverse relationship with credit risk, whereas bank size and financing gap exhibit a positive correlation with credit risk. This study aligns with the findings of Kajola, Babatunji, Olabisi, and Babatolu (2019), who investigated the impact of credit management on the financial performance of banks. Ten banks listed on the Nigerian Stock Exchange were studied. Secondary data from 2005 to 2016 were gathered about the Non-Performing Loan to Total Loan Ratio (NPLDR), capital adequacy, Return On Assets (ROA), and Return On Equity (ROE). The research using Generalized Least Squares (GLS) regression determined that all credit management indicators exhibit a strong correlation with Return On Assets (ROA) and Return On Equity (ROE).

Adegbeie and Otitolaiye (2020) investigated the

impact of credit risk on the financial performance of Deposit Money Banks in Nigeria. The investigation encompassed the years 2006 to 2018, with 169 firms. The findings indicated a statistically significant positive correlation between financial performance and credit management. The research aligns with Kasali and Fashanu (2020), who investigated the relationship between credit management and the financial performance of banking institutions in Nigeria. Primary data was collected from 59 participants across two designated banks. Correlation and regression analysis were conducted, revealing that an effective credit strategy boosts the efficiency of enterprises.

Emmanuel and Ekwere (2022) analyzed credit risk and the performance of banks in Nigeria. Data was collected from ten (10) banks between 2006 and 2018 about NPLs, LLP, ROA, and ROE. Utilizing econometric tools, the study identified a substantial positive association between these variables and the performance of banks in Nigeria.

Method

The research employed ex-post facto design, as utilized in similar studies by Gisemba (2010), Van Greuning and Brajovic-Bratanovic (2003), and Achou and Tenguh (2008). The ex-post facto research design is considered the most suitable due to its reliance on pre-existing secondary data that has received consent from relevant authorities, without any manipulation.

The study population comprised all DMBs in Nigeria. As of January 2025, there were 21 deposit money banks in Nigeria, according to the official website of the Central Bank of Nigeria. The sample subjects were intentionally selected from banks listed on the Nigerian Stock Exchange before 2006. The sample subjects include Diamond Bank, Fidelity Bank, First Bank, First City Monument Bank, Skye Bank (now Polaris Bank), Sterling Bank, Access Bank, Stanbic IBTC, Guarantee Trust Bank, Union Bank, United Bank for Africa (UBA), Wema Bank, Zenith Bank Plc, and Unity Bank Plc. The duration of this study spans thirteen (13) years, from 2012 to 2025.

Secondary data were utilized, sourced from the annual reports of deposit money banks in Nigeria

covering the period from 2015 to 2025. Secondary data constitutes one of the most reliable sources of authentic information for the investigation. The data is more reliable than primary data, which may be influenced by individual opinions (Greuning & Bratanovic, 2007) (Devinaga, 2010). They have implemented various steps to verify authenticity, including audits, reviews, and analyses by the Central Bank of Nigeria; hence, it might serve as an accurate representation of the business's condition and health.

The data utilized was derived from the yearly financial statements audited by the selected deposit money institutions; as these entities are publicly listed, the accounts are accessible to the public. Validity assesses the extent to which an instrument accurately measures its intended construct. The researcher guaranteed the precise extraction of data from the bank's Financial Statements, while the supervisor subjected the statistics to examination.

Reliability assesses the consistency of measurement instruments and the data they produce. The banks' Financial Statements underwent independent audits by statutory auditors and received approval from the CBN and SEC/NSE in compliance with CAMA sections 352-354.

Method of Data

The research investigated the impact of credit management on the financial performance of publicly listed Deposit Money institutions in Nigeria. The analysis was conducted in three phases: the pre-estimate phase, the estimation phase, and the diagnostic phase. Descriptive analysis, correlation analysis, and variance inflation factor analyses were employed during the pre-estimation phase to assess the features and suitability of the series in the distribution.

During the estimate phase, both simple and multiple linear regression analyses were employed to evaluate hypothesis one and two, as well as the primary purpose of the study.

Regression analysis is appropriate as it is considered an objective method for assessing the impact of independent factors on dependent variables, rather than relying on subjective assessment. It is

straightforward and the optimal linear unbiased estimator among all unbiased estimators; it is efficient and demonstrated to possess the shortest variance while also minimizing the squares of the residuals.

The diagnostic assessments conducted include the heteroscedasticity test, cross-dependence test, and serial correlation test. These tests aim to assess the model's suitability and identify the best relevant estimating technique for testing the formulated assumptions. The investigation comprised three stages to assess the model's suitability for estimate and to prevent false results.

Model specification

The regression model used is as shown below:

$$FP_{it} = \alpha_1 + \beta_1 NPL_{it} + \mu_{it} \quad \text{Model 1}$$

$$FP_{it} = \alpha_2 + \beta_2 CAR_{it} + \mu_{it} \quad \text{Model 2}$$

$$FP_{it} = \alpha_3 + \beta_3 LLP_{it} + \mu_{it} \quad \text{Model 3}$$

$$FP_{it} = \alpha_4 + \beta_4 LDR_{it} + \mu_{it} \quad \text{Model 4}$$

$$ROE_t = \beta_0 + \beta_1 NPL_{it} + \beta_2 LDR_{it} + \beta_3 LTD_{it} + \beta_4 CAR_{it} + e_{it} \quad \text{Model 5}$$

$$FP_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CAR_{it} + \beta_3 LLP_{it} + \beta_4 LDR_{it} + \mu_i \quad \text{main model A}$$

$$FP_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CAR_{it} + \beta_3 LLP_{it} + \beta_4 LDR_{it} + \beta_5 BSZ_{it} + \beta_6 BTR_{it} + \mu_i \quad \text{main model B}$$

Where.

FP_{it} = Financial performance of ith bank at year t.

NPL_{it} = Non-performing Loan ratio of ith bank at year t.

CAR_{it} = Capital Adequacy Ratio of ith bank at year t.

LRR_{it} = Loan loss provision of ith bank at year t.

LDR_{it} = Loan to Deposit ratio of ith bank at year t.

BSZ_{it} = Bank Size of ith bank at year t.

BTR_{it} = Total Revenue of ith bank at year t.

μ_i = disturbance term.

β_0 = intercept.

$\beta_1 - \beta_5$ = coefficient of the independent variables.

The test above is carried out at 5% test statistics.

Model evaluation

1. T-statistic: measure of the statistical significance of an independent variable x in explaining the dependent variable y. It is determined by dividing the estimated regression coefficient b by its standard error SB. Thus, the t-statistic measures how many standard errors the coefficient is away from zero. Generally, any t-value greater than +2 or less than - 2 is acceptable. The higher the t-value, the greater the confidence we have in the coefficient as a predictor. Low t-values are indications of low reliability of the predictive power of that coefficient. The p-value of the coefficients was used to determine the significance of the individual parameters.
2. F-test: is any statistical test in which the test statistic has an F-distribution under the null hypothesis. It is most often used when comparing statistical models that have been fit to a data set, to identify the model that best fits the population from which the data were sampled. Exact F-tests mainly arise when the models have been fit to the data using least squares. The p-value of the coefficients was used to determine the significance of the joint parameter.
3. R-squared and Adjusted R-squared: R-Squared, also known as coefficient of determination and Adjusted R-squared known as coefficient of multiple determination, are statistical terms saying how good one term is at predicting another. The higher the value of R-Square, the better is the prediction of one term from another said by Cameron, and Windmeijer (1996).

Table. 1. A-Priori expectation

S/N	Variable	Measurement	Expected Sign	Interpretation
1.	FP_{it}	Financial performance of ith bank at year t		
	Independent Variables			
2.	NPL_{it}	Non-performing Loan ratio of ith bank at year t.	-	$\beta < 0$

3.	CAR _{it}	Capital Adequacy ratio of ith bank at year t.	+	$\beta > 0$
4.	LPP _{it}	Loan loss provision of ith bank at year t.	+	$\beta > 0$
5.	LDR _{it}	Loan to Deposit ratio of ith bank at year t.	-	$\beta < 0$
6.	BSZ _{it}	Bank Size of ith bank at year t.	+	$\beta > 0$
7.	BTR _{it}	Total Revenue of ith bank at year t.	+	$\beta > 0$

Decision rule

Reject the null hypothesis when p-value < 0.05

Results and Discussion

Descriptive analysis

Multicollinearity test

The multicollinearity test was conducted using Variance Inflation Factor (VIF) as presented in Table 1

Table 1: Variance inflation factor test

Variable	VIF	1/VIF
LLP	1.05	0.954148
CAR	1.19	0.840549
NPL	1.23	0.810082
LTD	1.24	0.804589
BSZ	4.73	0.211341
BTR	4.43	225790
Mean VIF	2.314.2	

benchmark for Mean of the Variance Inflation Factor is 5.0 while for the individual reverse factor is 1. Considering the reverse variance inflation factor of each of the variables ranging from 0.21 to 0.95 all below the threshold of “1” with the average of the being 2.3 being less than the benchmark of 5.0. This indicated that multicollinearity problems do not exist among the variables and that the series are suitable for the analysis.

Test of Hypothesis One (Ho1)

Research objective 1: To determine the effect of non-performing loans ratio on financial performance of Deposit Money Banks in Nigeria.

Research question 1: What is the effect of non-performing loans ratio on financial performance of Deposit Money Banks in Nigeria?

Research Hypothesis 1 (ho1): Non-performing Loans ratio has no significant effect on financial performance of Deposit Money Banks in Nigeria.

Researcher design: 2025: In Choudhry (2011), the

Table 2: Test of hypothesis one

	ROCE				DPRS			
Type of Estimates	RE GLS (DRISCOLL-KRAAY STD. ERR.)				POOLED OLS WITH CLUSTER STD. ERR			
Variable	Coeff	Std.Err	t-test	Prob	Coeff	Std.Err	t-test	Prob
NPL	-0.026	0.01	-2.47	0.028	-0.005	0.002	-2.69	0.008
Constant	1.592	0.518	3.08	0.009	0.465	0.047	9.94	0.000
R2	0.059				0.04			
Hausman Test	chi ² (1) = 0.80 (0.37)				chi ² (1) = 0.53 (0.46)			
Breusch Pagan LM Test	chi ² (1) = 12.96 (0.00)				chi ² (1) = 0.76 (0.38)			
Heteroskedasticity Test	chi ² (1) = 143.49 (0.00)				chi ² (1) = 3.51 (0.06)			
Pesaran CD Test	8.812 (0.00)							
Serial Auto-Correlation Test	F(1, 12) = 0.801 (0.388)				F(1, 12) = 11.85 (0.00)			

Researcher design: 2025

Model 1a and 1b

$$FP_{it} = \alpha_1 + \beta_1 NPL_{it} + \mu_{it}$$

$$ROCE_{it} = 1.592 - 0.026NPL_{it}$$

$$DPRS_{it} = 0.465 - 0.005NPL_{it}$$

Interpretation

Diagnostic tests: The results of the Hausman tests for both models determining the most appropriate estimating technique between Fixed Effect and Random Effect conducted at significance level of 5 per

cent; with p -values of 0.37, and 0.46 being higher than the 5 per cent level of significance chosen for the study reveal that Random Effect is the most appropriate estimator according to its null hypothesis which states that there is presence of unsystematic difference in the model coefficients; thus, the study does accept the null hypothesis. The confirmatory tests on the results of Hausman tests conducted using Breusch-Pagan Lagrangian Multiplier test, deciding the most appropriate estimating technique between the random effects and pooled OLS, with null form of “no panel effect” that is “no significant difference across units”. The results with p -values of 0.00, and 0.38 confirmed the appropriateness of the random Effect that there exist a panel effect for Model 1a but negates that of Model 1b, that is no panel effect in Model 1b, which imply that random effect is the most appropriate for Model 1a (ROCE), while Pooled OLS is the most appropriate for Model 1b (DPRS).

Cross-sectional Independence Test is only applicable when there exists a panel effect (Model 1a), the result with p -values of 0.00 revealed that the residuals of the model across the firms “i” are correlated over time “t”. Breusch-Pagan/Cook-Weisberg Test with p -values of 0.00 and 0.06 indicated that there is presence of hetero skedasticity problem in Model 1a while Model 1b has no hetero skedasticity problem, which implies that the variations in the residuals of the model over the period “t” in Model 1a is trending while that of Model 1b is stable. The existence of associations among the coefficients of the model and its residuals were tested using Wooldridge test for serial autocorrelation as an unhealthy association result to the error terms being smaller than expected and the co-efficient of determination being higher than normal. The statistics derived with p -values of 0.39 and 0.00 support the null hypothesis which states that there is no first order autocorrelation for Model 1a but negates that of Model 1b. This implies that there is no unhealthy association among the coefficients of the models and its residuals in Model 1a but otherwise in Model 1b.

Based on the results of the diagnostic tests carried out; Model 1a is estimated using Random Effect Generalized Least Square with Driscoll-Kraay Standard Errors while Model 1b is estimated using Pooled Ordinary Least Square with Cluster Standard

Errors.

$$\begin{aligned} FP_{it} &= \alpha_1 + \beta_1 NPL_{it} + \mu_{it} \\ ROCE_{it} &= 1.592 - 0.026NPL_{it} \\ DPRS_{it} &= 0.465 - 0.005NPL_{it} \end{aligned}$$

The simple linear regression estimate of Model 1 shows that non-performing loans ratio has significant negative effect on financial performance measured by Return On Capital Employed (ROCE) and Dividend per Share (DPRS). This is indicated by the sign of the coefficients that is $\beta_1 = -0.026 < 0$ and $-0.005 < 0$, which is consistent with the a priori expectation that non-performing loans ratio has a negative effect on Financial Performance of Deposit Money Banks in Nigeria. Based on the size and sign of the independent variable (β_1) coefficient; a 1% increase in NPL should on average result to 0.026% and 0.005% decrease in return on capital employed and dividend per share respectively. However, the t-statistic of -2.47 and -2.69 with corresponding high p -values of 0.028 and 0.008 respectively imply significant effect of non-performing loan on financial performance of deposit money bank.

Furthermore, the R-squared shows 0.059 and 0.04 on ROCE & DPRS model respectively. This shows that about 5.9% variations in ROCE can be attributed to NPL hence 94.1% variation in ROCE are attributed to other factors not included in the model. Similarly, about 4% variations in DPRS can be attributed to NPL hence 96% variation in DPRS are attributed to other factors not included in the model. Conclusively, this study failed to accept the null hypothesis which states that “Non-Performing Loans ratio has no significant effect on financial performance of Deposit Money Banks in Nigeria.” For both measures of financial performance (ROCE and DPRS).

Test of Hypothesis Two (Ho2)

Research objective 2: To assess the effect of Capital Adequacy ratio on financial performance of Deposit Money Banks in Nigeria.

Research question 2: What is the effect of Capital Adequacy ratio on return on financial performance of Deposit Money Banks in Nigeria?

Research Hypothesis 2 (Ho2): Capital Adequacy ratio has no effect on financial performance of

Deposit Money Banks in Nigeria.

Table 3: Test of hypothesis two

	ROCE				DPRS			
Type of Estimates	RE GLS (DRISCOLL-KRAAY STD. ERR.)				POOLED OLS WITH CLUSTER STD. ERR			
Variable	Coeff	Std.Err	t-test	Prob	Coeff	Std.Err	t-test	Prob
CAR	0.063	0.01	6.07	0.000	0.005	0.002	2.27	0.041
Constant	0.505	0.444	1.14	0.275	0.346	0.076	4.54	0.001
R2	0.1363				0.0219			
Hausman Test	$\chi^2_{(1)} = 0.21 (0.645)$				$\chi^2_{(1)} = 8.56 (0.00)$			
Breusch Pagan LM Test	$\chi^2_{(1)} = 28.42 (0.00)$				-			
Testparm Test	-				$F_{(13, 148)} = 21.19 (0.00)$			
Heteroskedasticity Test	$\chi^2_{(1)} = 73.26 (0.00)$				$\chi^2_{(13)} = 261.27 (0.00)$			
Pesaran CD Test	9.951 (0.00)				21.631 (0.00)			
Serial Auto-Correlation Test	$F(1, 12) = 1.788 (0.206)$				$F(1, 12) = 16.939 (0.00)$			

Researcher design: 2025

Model 2a and 2b

$$FP_{it} = \alpha_1 + \beta_1 CAR_{it} + \mu_{it}$$

$$ROCE_{it} = 0.505 + 0.063CAR_{it}$$

$$DPRS_{it} = 0.076 + 0.002CAR_{it}$$

Interpretation**Diagnostic tests**

The results of the Hausman tests for both models determining the most appropriate estimating technique between Fixed Effect and Random Effect conducted at significance level of 5 per cent; with ρ -values of $0.645 > 0.05$, and $0.00 < 0.05$ reveal that while Random Effect is the most appropriate estimator for Model 2a, Fixed Effect is the most appropriate for Model 2b. The confirmatory tests on the results of Hausman tests conducted using Breusch-Pagan Lagrangian Multiplier test, deciding the most appropriate estimating technique between the random effects and pooled OLS for Model 2a, with null form of “no panel effect” that is “no significant difference across units”. The results with ρ -values of 0.00 confirmed the appropriateness of the random Effect that there exists a panel effect for Model 2a (ROCE); the result of the Testparm test carried out to confirm the result of Hausman Test for Model 2b with ρ -values of 0.00 showed that Fixed Effect is the most appropriate for Model 2b (DPRS).

Cross-sectional Independence Test for both Models

with ρ -values of 0.00 and 0.00 revealed that the residuals of the model across the firms “i” are correlated over time “t”. Breusch Pagan/Cook-Weisberg Test and Modified Wald Test with ρ -values of 0.00 and 0.00 indicated that there is presence of heteroskedasticity problem in both models, which implies that the variations in the residuals of the model over the period “t” in both Models are unstable over time. The existence of associations among the coefficients of the model and its residuals were tested using Wooldridge test for serial autocorrelation as an unhealthy association result to the error terms being smaller than expected and the co-efficient of determination being higher than normal. The statistics derived with ρ -values of 0.21 and 0.00 support the null hypothesis which states that there is no first order autocorrelation for Model 2a but negates that of Model 2b. This implies that there is no unhealthy association among the coefficients of the models and its residuals in Model 1a but otherwise in Model 1b.

Based on the results of the diagnostic tests carried out; Model 2a is estimated using Random Effect Generalized Least Square with Driscoll-Kraay Standard Errors while Model 2b is estimated using Fixed Effect Regression with Driscoll-Kraay Standard Errors.

$$FP_{it} = \alpha_1 + \beta_1 CAR_{it} + \mu_{it}$$

$$ROCE_{it} = 0.505 + 0.063CAR_{it}$$

$$DPRS_{it} = 0.076 + 0.002CAR_{it}$$

The simple linear regression estimate of Model 2a and 2b shows that capital adequacy ratio has significant positive effect on financial performance measured by Return On Capital Employed (ROCE) and Dividend per Share (DPRS). This is indicated by the sign of the coefficients that is $\beta_1 = 0.063 > 0$ and $0.005 > 0$, which is consistent with the a priori expectation that capital adequacy ratio has a positive effect on Financial Performance of Deposit Money Banks in Nigeria. Based on the size and sign of the independent variable (β_1) coefficient; a 1% increase in CAR should on average result to 0.063% and 0.005% increase in return on capital employed and dividend per share respectively. However, the t-statistics of 6.07 and 2.27 with corresponding high p-values of 0.000 and 0.041 respectively imply significant effect of capital adequacy ratio on financial performance of deposit money bank.

Furthermore, the R-squared shows 0.1363 and 0.0219 on ROCE & DPRS model respectively. This shows that about 13.63% variations in ROCE can be attributed to CAR hence 86.37% variation in ROCE are attributed to other factors not included in the

model. Similarly, about 2.19% variations in DPRS can be attributed to CAR hence 97.81% variation in DPRS are attributed to other factors not included in the model. Conclusively, this study failed to accept the null hypothesis which states that “Capital adequacy ratio has no significant effect on financial performance of Deposit Money Banks in Nigeria.” For both measures of financial performance (ROCE and DPRS).

Test of Hypothesis Three (Ho3)

Research objective 3: To determine the effect of loan loss provision on financial performance of Deposit Money Banks in Nigeria

Research question 3: To what degree does loan loss provision effect on return on financial performance of Deposit Money Banks in Nigeria?

Research hypothesis 3 (ho3): Loan loss provision has no effect on financial performance of Deposit Money Banks in Nigeria.

Table 4: Test of hypothesis three

	ROCE				DPRS			
Type of Estimates	RE GLS (DRISCOLL-KRAAY STD. ERR.)				POOLED OLS WITH CLUSTER STD. ERR			
Variable	Coeff	Std.Err	t-test	Prob	Coeff	Std.Err	t-test	Prob
LLP	0.178	0.039	4.53	0.001	0.008	0.006	1.44	0.153
Constant	1.925	0.342	5.63	0.000	0.439	0.047	9.31	0.000
R2	0.25				0.012			
Hausman Test	$\chi^2_{(1)} = 4.61 (0.03)$				$\chi^2_{(1)} = 0.21 (0.648)$			
Breusch Pagan LM Test	-				$\chi^2_{(1)} = 0.11 (0.74)$			
Testparm Test	$F_{(13, 148)} = 3.66 (0.00)$ -				-			
Heteroskedasticity Test	$\chi^2_{(13)} = 723.55 (0.00)$				$\chi^2_{(1)} = 4.91 (0.03)$			
Pesaran CD Test	9.371 (0.00)				-			
Serial Auto-Correlation Test	$F_{(1, 12)} = 1.164 (0.30)$				$F_{(1, 12)} = 16.38 (0.00)$			

Researcher design: 2025

Model 3a and 3b

$$FP_{it} = \alpha_1 + \beta_1 LLP_{it} + \mu_{it}$$

$$ROCE_{it} = 1.925 + 0.178LLP_{it}$$

$$DPRS_{it} = 0.439 + 0.008LLP_{it}$$

Interpretation

Diagnostic tests: The results of the Hausman tests

for both models determining the most appropriate estimating technique between Fixed Effect and Random Effect conducted at significance level of 5 per cent; with p-values of $0.03 < 0.05$, and $0.648 > 0.05$ reveal that while Fixed Effect is the most appropriate estimator for Model 3a, Random Effect is the most appropriate for Model 3b. The confirmatory tests on the results of Hausman tests conducted using the Testparm test carried out to confirm the result of Hausman Test for Model 3a with p-values of 0.00

showed that Fixed Effect is the most appropriate for Model 3a (ROCE). While Breusch-Pagan Lagrangian Multiplier test, deciding the most appropriate estimating technique between the random effects and pooled OLS for Model 3b, with null form of “no panel effect” that is “no significant difference across units”. The results with p-values of 0.74 negate the Hausman output, thus Pooled OLS will be the most appropriate estimator for Model 3b (ROCE).

Cross-sectional Independence Test is only applicable when there exists a panel effect (Model 3a), the result with p-values of 0.00 revealed that the residuals of the model across the firms “i” are correlated over time “t”. Modified Wald Test and Breusch-Pagan/Cook-Weisberg Test with p-values of 0.00 and 0.03 indicated that there is presence of heteroskedasticity problem in both models, which implies that the variations in the residuals of the model over the period “t” in both Models are unstable over time. The existence of associations among the coefficients of the model and its residuals were tested using Wooldridge test for serial auto correlation as an unhealthy association result to the error terms being smaller than expected and the co-efficient of determination being higher than normal. The statistics derived from p values of 0.30 and 0.00 support the null hypothesis which states that there is no first order autocorrelation for Model 3a but negates that of Model 3b. This implies that there is no unhealthy association among the coefficients of the models and its residuals in Model 3a but otherwise in Model 3b.

Based on the results of the diagnostic tests carried out; Model 3a is estimated using Fixed Effect Regression with Driscoll-Kraay Standard Errors while Model 3b is estimated using Pooled OLS with Cluster Errors.

$$\begin{aligned} FP_{it} &= \alpha_1 + \beta_1 LLP_{it} + \mu_{it} \\ ROCE_{it} &= 1.925 + 0.178LLP_{it} \\ DPRS_{it} &= 0.439 + 0.008LLP_{it} \end{aligned}$$

The simple linear regression estimate of Model 3a and 3b shows that loan loss provision ratio has significant positive effect on financial performance measured by return on capital employed (ROCE) but insignificant positive effect on financial performance measured by Dividend per Share (DPRS). This is

indicated by the sign of the coefficients that is $\beta_1 = 0.178 > 0$ and $0.008 > 0$; which is consistent with the a priori expectation that loan loss provision ratio has a positive effect on Financial Performance of Deposit Money Banks in Nigeria. Based on the size and sign of the independent variable (β_1) coefficient; a 1% increase in loan loss provision ratio should on average result to 0.178% and 0.008% increase in return on capital employed and dividend per share respectively. However, the t-statistics of 4.53 and 1.44 with corresponding p-values of 0.001 and 0.153 respectively imply significant effects of loan loss provision ratio on measured by Return On Capital Employed (ROCE) but insignificant positive effect on financial performance measured by Dividend Per Share (DPRS) of deposit money banks.

Furthermore, the R-squared shows 0.25 and 0.0118 on ROCE & DPRS model respectively. This shows that about 25% variations in ROCE can be attributed to LLP hence 75% variation in ROCE are attributed to other factors not included in the model. Similarly, about 1.18% variations in DPRS can be attributed to LLP hence 98.82% variation in DPRS are attributed to other factors not included in the model.

Conclusively, using ROCE as measures of financial performance, this study failed to accept the null hypothesis which states that “loan loss provision ratio has no significant effect on financial performance of Deposit Money Banks in Nigeria.” While on the other hand, using DPRS as measure of financial performance, the study does accept the null hypothesis which states that “loan loss provision ratio has no significant effect on financial performance of Deposit Money Banks in Nigeria.”

Test of Hypothesis Four (Ho4)

Research objective 2: To evaluate the effect of loan to deposit ratio on financial performance of Deposit Money Banks in Nigeria

Research question 4: To what extent does loan to deposit on financial performance of Deposit Money Banks in Nigeria?

Research Hypothesis 2 (Ho4): Loan to deposit ratio has no effect on financial performance of Deposit Money Banks in Nigeria.

Table 5: Test of hypothesis two

	ROCE				DPRS			
Type of Estimates	RE GLS (DRISCOLL-KRAAY STD. ERR.)				POOLED OLS WITH CLUSTER STD. ERR			
Variable	Coeff	Std.Err	t-test	Prob	Coeff	Std.Err	t-test	Prob
LTD	0.026	0.013	2.00	0.057	0.003	0.002	1.31	0.193
Constant	-0.32	1.119	-0.29	0.779	0.228	0.146	1.56	0.12
R2	0.0194				0.01			
Hausman Test	$\chi^2_{(1)} = 0.87 (0.35)$				$\chi^2_{(1)} = 0.36 (0.55)$			
Breusch Pagan LM Test	$\chi^2_{(1)} = 22.31 (0.00)$				$\chi^2_{(1)} = 0.38 (0.54)$			
Heteroskedasticity Test	$\chi^2_{(1)} = 48.32 (0.00)$				$\chi^2_{(1)} = 0.25 (0.62)$			
Pesaran CD Test	10.349 (0.00)				-			
Serial Auto-Correlation Test	$F_{(1, 12)} = 11.99 (0.00)$				$F_{(1, 12)} = 11.99 (0.00)$			

Researcher design: 2025

Model 6a and 6b

$$FP_{it} = \alpha_1 + \beta_1 LTD_{it} + \mu_{it}$$

$$ROCE_{it} = -0.32 + 0.026LTD_{it}$$

$$DPRS_{it} = 0.228 + 0.003LTD_{it}$$

Interpretation

Diagnostic tests

The results of the Hausman tests for both models determining the most appropriate estimating technique between Fixed Effect and Random Effect conducted at significance level of 5 per cent; with ρ -values of 0.35, and 0.55 being higher than the 5 per cent level of significance chosen for the study reveal that Random Effect is the most appropriate estimator according to its null hypothesis which states that there is presence of unsystematic difference in the model coefficients; thus, the study does accept the null hypothesis. The confirmatory tests on the results of Hausman tests conducted using Breusch-Pagan Lagrangian Multiplier test, deciding the most appropriate estimating technique between the random effects and pooled OLS, with null form of “no panel effect” that is “no significant difference across units”. The results with ρ -values of 0.00, and 0.54 confirmed the appropriateness of the random Effect that there exist a panel effect for Model 6a but negates that of Model 6b, that is no panel effect in Model 6b, which imply that random effect is the most appropriate for Model 6a (ROCE), while Pooled OLS is the most appropriate for Model 6b (DPRS).

Cross-sectional Independence Test is only applicable when there exists a panel effect (Model 6a), the result with ρ -values of 0.00 revealed that the residuals of the model across the firms “i” are correlated over time “t”. Breusch-Pagan/Cook-Weisberg Test with ρ -values of 0.00 and 0.62 indicated that there is presence of heteroskedasticity problem in Model 6a while Model 6b has no heteroskedasticity problem, which implies that the variations in the residuals of the model over the period “t” in Model 1a is trending while that of Model 6b is stable. The existence of associations among the coefficients of the model and its residuals were tested using Wooldridge test for serial autocorrelation as an unhealthy association result to the error terms being smaller than expected and the co-efficient of determination being higher than normal. The statistics derived with ρ -values of 0.58 and 0.00 support the null hypothesis which states that there is no first order autocorrelation for Model 6a but negates that of Model 6b. This implies that there is unhealthy association among the coefficients of the models and its residuals in Model 6a and otherwise in Model 6b.

Based on the results of the diagnostic tests carried out; Model 1a is estimated using Random Effect Generalized Least Square with Driscoll-Kraay Standard Errors while Model 1b is estimated using Pooled Ordinary Least Square with Cluster Standard Errors.

$$FP_{it} = \alpha_1 + \beta_1 LTD_{it} + \mu_{it}$$

$$ROCE_{it} = -0.32 + 0.026LTD_{it}$$

$$DPRS_{it} = 0.228 + 0.003LTD_{it}$$

The simple linear regression estimate of Model 6a and 6b shows that loan to total deposit ratio has insignificant positive effect on financial performance measured by return on capital employed (ROCE) and Dividend per Share (DPRS). This is indicated by the sign of the coefficients that is $\beta_1 = 0.026 > 0$ and $0.003 > 0$; which is consistent with the a priori expectation that loan to total deposit ratio has a positive effect on Financial Performance of Deposit Money Banks in Nigeria. Based on the size and sign of the independent variable (β_1) coefficient; a 1% increase in loan to total deposit ratio should on average result to 0.026% and 0.002% increase in return on capital employed and dividend per share respectively.

However, the t-statistics of 2.00 and 1.31 with corresponding p-values of 0.057 and 0.193 respectively imply insignificant positive effect of loan to total deposit ratio on measured by Return On Capital Employed (ROCE) and Dividend Per Share (DPRS) of deposit money banks. Furthermore, the R-squared shows 0.0194 and 0.01 on ROCE & DPRS model respectively. This shows that about 1.94% variations in ROCE can be attributed to LTD hence 98.06% variation in ROCE are attributed to other factors not included in the model. Similarly, about 1%

variations in DPRS can be attributed to LTD hence 99% variation in DPRS are attributed to other factors not included in the model.

Conclusively, using ROCE as measures of financial performance, this study does accept the null hypothesis which states that “loan to total deposit ratio has no significant effect on financial performance of Deposit Money Banks in Nigeria.”

Test of main hypothesis (Without Control Variables)

Research main objective: To evaluate empirically the effect of Credit Management on Financial Performance of Deposit Money Banks (DMBs) in Nigeria.

Main research question: To ascertain the effect of Credit Management on Financial Performance of Deposit Money Banks in Nigeria?

Main Research Hypothesis (Ho): Credit Management has no significant effect on Financial Performance of Deposit Money Banks in Nigeria.

Table 6: Test of hypothesis one

	ROCE				DPRS			
Type of Estimates	RE GLS (DRISCOLL-KRAAY STD. ERR.)				POOLED OLS WITH CLUSTER STD. ERR			
Variable	Coeff	Std.Err	t-test	Prob	Coeff	Std.Err	t-test	Prob
NPL	-0.013	0.002	-5.24	0.00	-0.004	0.002	-2.23	0.027
LTD	0.009	0.003	2.65	0.02	0.001	0.002	0.43	0.671
Constant	1.863	0.241	7.72	0.00	0.388	0.155	2.49	0.014
Adj. R ² ; F-Stat (Prob)	0.4196; Wald chi2(4) = 241.2 (0.00)				0.028; F(4, 170) = 2.26 (0.065)			
Hausman Test	chi ² (2) = 9.07 (0.06)				chi ² (2) = 7.86 (0.097)			
Breusch Pagan LM Test	chi ² (1) = 6.63 (0.01)				chi ² (1) = 0.39 (0.53)			
Heteroskedasticity Test	chi ² (1) = 3.99 (0.046)				chi ² (1) = 3.99 (0.046)			
Pesaran CD Test	8.812 (0.00)							
Serial Auto-Correlation Test	F(1, 12) = 4.584 (0.054)				F(1, 12) = 24.74 (0.00)			

Researcher design: 2025

Main Model (Without Control Variables)

$$FP_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LTD_{it} + \mu_i$$

$$ROCE_{it} = 1.863 - 0.013NPL_{it} + 0.009LTD_{it}$$

$$DPRS_{it} = 0.388 - 0.004NPL_{it} + 0.001LTD_{it}$$

Interpretation

Diagnostic tests

The results of the Hausman tests for both models determining the most appropriate estimating technique between Fixed Effect and Random Effect conducted at significance level of 5 per cent; with ρ -values of 0.06, and 0.097 being higher than the 5 per cent level of significance chosen for the study reveal that Random Effect is the most appropriate estimator according to its null hypothesis which states that there is presence of unsystematic difference in the model coefficients; thus, the study does accept the null hypothesis. The confirmatory tests on the results of Hausman tests conducted using Breusch-Pagan Lagrangian Multiplier test, deciding the most appropriate estimating technique between the random effects and pooled OLS, with null form of “no panel effect” that is “no significant difference across units”. The results with ρ -values of 0.01, and 0.53 confirmed the appropriateness of the random Effect that there exist a panel effect for Model 5a but negates that of Model 5b, that is no panel effect in Model 5b, which imply that random effect is the most appropriate for Model 5a (ROCE), while Pooled OLS is the most appropriate for Model 5b (DPRS).

Cross-sectional Independence Test is only applicable when there exists a panel effect (Model 5a), the result with ρ -values of 0.00 revealed that the residuals of the model across the firms “i” are correlated over time “t”. Breusch-Pagan/Cook-Weisberg Test with ρ -values of 0.00 and 0.046 indicated that there is presence of heteroskedasticity problem in both models, which implies that the variations in the residuals of the model over the period “t” in both models are trending. The existence of associations among the coefficients of the model and its residuals were tested using Wooldridge test for serial autocorrelation as an unhealthy association result to the error terms being smaller than expected and the co-efficient of determination being higher than normal. The statistics derived with ρ -values of 0.053 and 0.00 support the null hypothesis which states that there is no first order autocorrelation for Model 5a but negates that of Model 5b. This imply that there is no unhealthy association among the coefficients of the models and its residuals in Model 5a and otherwise in Model 5b.

Based on the results of the diagnostic tests carried out; Model 1a is estimated using Random Effect Generalized Least Square with Driscoll-Kraay Standard Errors while Model 1b is estimated using Pooled Ordinary Least Square with Cluster Standard Errors.

$$\begin{aligned} FP_{it} &= \beta_0 + \beta_1 NPL_{it} + \beta_2 LTD_{it} + \mu_i \\ ROCE_{it} &= 1.863 - 0.013NPL_{it} + 0.009LTD_{it} \\ DPRS_{it} &= 0.388 - 0.004NPL_{it} + 0.001LTD_{it} \end{aligned}$$

The multiple linear regression estimate of Model 5 shows that non-performing loans ratio has significant negative effect on financial performance measured by return on capital employed (ROCE) and Dividend per Share (DPRS) ($\beta = -0.013$, $p(0.00) < 0.05$ and $\beta = -0.004$, $p(0.00) < 0.05$); capital adequacy ratio, loan loss Provision ratio, and loan to total deposit ratio have significant positive effect on financial performance measured by return on capital employed (ROCE) ($\beta = 0.059$; 0.175; 0.009, $p(0.00$; 0.00; 0.02) < 0.05) but insignificant positive effect on financial performance measured by Dividend per Share (DPRS); ($\beta = 0.002$; 0.005; 0.001, $p(0.498$; 0.381; 0.671) > 0.05); which are consistent with the a priori expectation that non-performing loans ratio has a negative effect on Financial Performance while capital adequacy ratio, loan loss Provision ratio, and loan to total deposit ratio have positive effect on financial performance of Deposit Money Banks in Nigeria. Based on the size and sign of the independent variable coefficients; a 1% increase in NPL should on average result to 0.013% and 0.004% decrease in return on capital employed and dividend per share respectively; 1% increase in capital adequacy ratio should on average result to 0.059% and 0.002% increase in return on capital employed and dividend per share respectively; 1% increase in loan loss provision ratio should on average result to 0.175% and 0.005% increase in return on capital employed and dividend per share respectively; and 1% increase in loan to total deposit ratio should on average result to 0.009% and 0.001% increase in return on capital employed and dividend per share respectively.

Furthermore, the Adjusted R-squared shows 0.4196 and 0.028 on ROCE & DPRS model respectively. This shows that about 41.96% variations in ROCE can be attributed to credit management surrogates (non-performing loan ratio, capital adequacy ratio, loan

loss Provision ratio, and loan to total deposit ratio) hence 50.04% variation in ROCE are attributed to other factors not included in the model. Similarly, 2.8% variations in DPRS can be attributed to credit management surrogates (non-performing loan ratio, capital adequacy ratio, loan loss Provision ratio, and loan to total deposit ratio), hence 97.2% variation in DPRS are attributed to other factors not included in the model.

From the result of the F-statistics, with p-values of 0.00 and 0.065, it is deduced that credit management significantly affects financial performance (ROCE) of listed Deposit Money Banks in Nigeria while credit management insignificantly affects financial performance (DPRS) of listed Deposit Money Banks in Nigeria.

Conclusively, using ROCE as measures of financial performance, this study failed to accept the null hypothesis which states that “credit management has no significant effect on financial performance of Deposit Money Banks in Nigeria.” While on the other

hand, using DPRS as measure of financial performance, the study does accept the null hypothesis which states that “credit management has no significant effect on financial performance of Deposit Money Banks in Nigeria.”

The main model (With Control Variables)

Test of main hypothesis

Research main objective: To evaluate empirically the effect of Credit Management on Financial Performance of Deposit Money Banks (DMBs) in Nigeria.

Main research question: To ascertain the effect of Credit Management on Financial Performance of Deposit Money Banks in Nigeria?

Main Research Hypothesis (Ho): Credit Management has no significant effect on Financial Performance of Deposit Money Banks in Nigeria.

Table 7: Test of hypothesis one

	ROCE				DPRS			
Type of Estimates	RE GLS (DRISCOLL-KRAAY STD. ERR.)				POOLED OLS WITH CLUSTER STD. ERR			
Variable	Coeff	Std.Err	t-test	Prob	Coeff	Std.Err	t-test	Prob
NPL	-0.011	0.003	-3.18	0.007	-0.001	0.001	-1.64	0.125
LTD	0.009	0.004	-2.46	0.029	0.003	0.002	1.61	0.131
Constant	3.956	7.003	0.56	0.582	-4.272	1.992	-2.14	0.051
Adj. R ² ; F-Stat (Prob)	0.4311; Wald chi2(6) = 321.95 (0.00)				0.4178; F(6, 13) = 11.07 (0.00)			
Hausman Test	chi2(2) = 5.20 (0.52)				chi2(2) = 19.76 (0.00)			
Breusch Pagan LM Test	chi2(1) = 8.30 (0.00) -				-			
Testparm Test	-				- F(13, 143) = 11.52 (0.00)			
Heteroskedasticity Test	chi2(1) = 329.21 (0.00)				chi2(13) = 242.12 (0.00)			
Pesaran CD Test	8.878 (0.00)				2.479 (0.013)			
Serial Auto-Correlation Test	F(1, 12) = 1.226 (0.29)				F(1, 12) = 1.063 (0.32)			

Researcher design: 2025

Main model (With Control Variables)

$$FP_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LDR_{it} + \mu_i$$

$$ROCE_{it} = 3.956 - 0.011 NPL_{it} + 0.009 LTD_{it}$$

$$DPRS_{it} = -4.272 - 0.001 NPL_{it} + 0.003 LTD_{it}$$

Interpretation

Diagnostic tests

The results of the Hausman tests for both models determining the most appropriate estimating technique between Fixed Effect and Random Effect conducted at significance level of 5 per cent; with p-

values of $0.52 > 0.05$, and $0.00 < 0.05$ reveal that while Random Effect is the most appropriate estimator for Model 6a, Fixed Effect is the most appropriate for Model 6b. The confirmatory tests on the results of Hausman tests conducted using Breusch-Pagan Lagrangian Multiplier test, deciding the most appropriate estimating technique between the random effects and pooled OLS for Model 6a, with null form of “no panel effect” that is “no significant difference across units”. The results with p -values of 0.00 confirmed the appropriateness of the random Effect that there exist a panel effect for Model 6a (ROCE); the result of the Testparm test carried out to confirm the result of Hausman Test for Model 6b with p -values of 0.00 showed that Fixed Effect is the most appropriate for Model 6b (DPRS).

Cross-sectional Independence Test for both Models with p -values of 0.00 and 0.01 revealed that the residuals of the model across the firms “i” are correlated over time “t”. BreuschPagan/Cook-Weisberg Test and Modified Wald Test with p -values of 0.00 and 0.00 indicated that there is presence of heteroskedasticity problem in both models, which implies that the variations in the residuals of the model over the period “t” in both Models are unstable over time. The existence of associations among the coefficients of the model and its residuals were tested using Wooldridge test for serial autocorrelation as an unhealthy association result to the error terms being smaller than expected and the co-efficient of determination being higher than normal. The statistics derived with p -values of 0.29 and 0.32 support the null hypothesis which states that there is no first order autocorrelation for both models. This implies that there is no unhealthy association among the coefficients of the models and its residuals in both models.

Based on the results of the diagnostic tests carried out; Model 6a is estimated using Random Effect Generalized Least Square with Driscoll-Kraay Standard Errors while Model 6b is estimated using Fixed Effect Regression with Driscoll-Kraay Standard Errors.

$$FP_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 LDR_{it} + \mu_i$$

$$ROCE_{it} = 3.956 - 0.011NPL_{it} + 0.009LTD_{it}$$

$$DPRS_{it} = -4.272 - 0.001NPL_{it} + 0.003LTD_{it}$$

The multiple linear regression estimate of Model 6 shows that non-performing loans ratio has significant negative effect on financial performance measured by return on capital employed (ROCE) but insignificant negative effect on Dividend per Share (DPRS) ($\beta = -0.011$, $p(0.01) < 0.05$ and $\beta = -0.001$, $p(0.125) > 0.05$); capital adequacy ratio, and loan to total deposit ratio have significant positive effect on financial performance measured by return on capital employed (ROCE) ($\beta = 0.058$; 0.009, $p(0.00$; 0.03) < 0.05) but insignificant positive effect on financial performance measured by Dividend per Share (DPRS); ($\beta = 0.002$; 0.003, $p(0.342$; 0.131) > 0.05); while loan loss Provision ratio has significant positive effect on both the ROCE and DPRS (($\beta = 0.172$, 0.008, $p(0.00$; 0.044) < 0.05) which are consistent with the a priori expectation that non-performing loans ratio has a negative effect on Financial Performance while capital adequacy ratio, loan loss Provision ratio, and loan to total deposit ratio have positive effect on financial performance of Deposit Money Banks in Nigeria.

Also, Bank size has insignificant negative effect on ROCE but insignificant positive effect on DPRS ($\beta = -0.297$, $p(0.716) > 0.05$ and $\beta = 0.479$, $p(0.073) > 0.05$); while Bank total revenue has insignificant positive effect on financial performance ($\beta = 0.005$, $p(0.109) > 0.05$ and $\beta = 0.002$, $p(0.125) > 0.212$).

Based on the size and sign of the independent variable coefficients; a 1% increase in NPL should on average result to 0.011% and 0.001% decrease in return on capital employed and dividend per share respectively; 1% increase in capital adequacy ratio should on average result to 0.058% and 0.002% increase in return on capital employed and dividend per share respectively; 1% increase in loan loss provision ratio should on average result to 0.172% and 0.008% increase in return on capital employed and dividend per share respectively; 1% increase in loan to total deposit ratio should on average result to 0.009% and 0.003% increase in return on capital employed and dividend per share respectively; 1% increase in bank size should on average result to 0.297% decrease in return on capital employed but 0.479 increase in dividend per share respectively; while 1 million naira increase in bank total revenue should on average result to 0.005% and 0.002%

increase in return on capital employed and dividend per share respectively.

Furthermore, the Adjusted R-squared shows 0.4311 and 0.4178 on ROCE & DPRS model respectively. This shows that about 43.11% variations in ROCE can be attributed to credit management surrogates (non-performing loan ratio, capital adequacy ratio, loan loss Provision ratio, and loan to total deposit ratio) hence 56.89% variation in ROCE are attributed to other factors not included in the model. Similarly, 41.78% variations in DPRS can be attributed to credit management surrogates (non-performing loan ratio, capital adequacy ratio, loan loss Provision ratio, and loan to total deposit ratio), hence 48.22% variation in DPRS are attributed to other factors not included in the model. From the result of the F-statistics, with p-values of 0.00 and 0.00, it is deduced that credit management significantly affects financial performance of listed Deposit Money Banks in Nigeria using both ROCE and DPRS as measures of financial performance.

Conclusively, this study failed to accept the null hypothesis which states that “credit management has no significant effect on financial performance of Deposit Money Banks in Nigeria.” For both measures of financial performance (ROCE and DPRS).

Discussion of Findings

The analysis conclusions correspond with prior research, such as those by Rose and Hudgin (2008), which demonstrated that the non-performing loans indicator impacts profitability, as measured by ROE, more significantly than the capital adequacy ratio. Similarly, Pan (2012) investigated the impact of non-performing loans, loan loss provisions, and loans and advances on bank performance, as assessed by Return on Assets and Return on Equity. The findings indicate that return on assets and return on equity exhibit an inverse connection with non-performing loans and loan loss provisions, respectively. Muriithi, Waweru, and Muturi (2016) investigated the impact of credit risk on the financial performance of commercial banks in Kenya and discovered that credit risk has a negative and substantial correlation with bank profitability. Nwanna and Oguezie (2017) examined the relationship between credit management and the profitability (ROA) of Deposit

Money Banks (DMBs) in Nigeria from 2006 to 2015, revealing that loans and advances, as well as loan loss provisions, exert a positive yet insignificant influence on profitability, whereas non-performing loans negatively and insignificantly affect profitability.

Also, Abiola and Olausi (2014) demonstrated that the ratio of non-performing loans and bad debt adversely impacts the performance of banks in Nigeria, however the correlation between secured and unsecured loan ratios and bank performance was shown to be minor. Mirach (2010) provided a comparable analysis in his research regarding the influence of credit risk management on the profitability of banks in Ethiopia. The study determined that the credit risk, as indicated by the nonperforming loan ratio, significantly inversely affects banks' financial performance, like the impact of capital adequacy on profitability. Furthermore, the loan-to-deposit ratio and bank size exert a favorable and considerable influence on banks' financial success.

The loan-to-deposit ratio and bank size significantly positively influence banks' financial performance. Koch and MacDonald (2009) demonstrate that credit risk management positively influences the profitability of commercial banks. NPL significantly influences both ROE and ROA, but CAR has relatively small impact on both metrics. Flamini et al. (2009) investigated the impact of credit risk management on the profitability of ten rural and community banks in the Brong Ahafo Region of Ghana from 2006 to 2010 (a five-year period) for our analysis. The panel regression model was utilized for estimate. Return on Equity (ROE) and Return on Assets (ROA) served as profitability metrics, whereas the Non-Performing Loans Ratio (NPLR) and Capital Adequacy Ratio (CAR) functioned as indicators of credit risk management. The data demonstrates a substantial positive correlation between non-performing loans and the profitability of rural banks, indicating that despite increased loan losses, these banks continue to generate profit. This signifies that rural banks lack robust and efficient credit risk management strategies.

Kargi (2011) empirically investigated the quantitative impact of credit risk on the performance of commercial banks in Nigeria over an 11-year

period (2000-2010). The conventional profit theory was utilized to define profit, quantified by Return on Assets (ROA), as a function of the ratio of Nonperforming Loans to Loans and Advances (NPL/LA), the ratio of Total Loans and Advances to Total Deposits (LA/TD), and the ratio of Loan Loss Provisions to Classified Loans (LLP/CL) as indicators of credit risk. The findings indicated that the influence of credit risk on bank performance, as measured by Return on Assets, is invariant across cross-sections. A 100 percent increase in non-performing loans diminishes profitability (ROA) by approximately 6.2 percent, while a 100 percent increase in loan loss provisions reduces profitability by roughly 0.65 percent. Conversely, a 100 percent increase in total loans and advances enhances profitability by about 9.6 percent.

Conclusion and Recommendations

Credit management decisions are a critical aspect of deposit money banks' strategies to optimize financial performance and attain sustainable expansion. This study aims to analyze credit management and financial performance in money deposit banks. The regression analysis findings indicate that non-performing loans, capital adequacy ratio, and loan-to-deposit ratio exhibit a negative significant relationship with return on capital employed, whereas loan loss provision positively and significantly affects return on capital employed. Additionally, non-performing loans and loan-to-deposit ratio negatively impact dividend per share, while capital adequacy ratio and loan loss provision positively influence dividend per share. Consequently, we conclude that credit management is a critical determinant of the financial performance of deposit money banks, significantly affecting their financial outcomes. Consequently, an inadequate credit management framework detrimentally impacts the financial system, whereas an effective credit management framework enhances the financial performance of Deposit Money Banks.

In accordance with the conclusions of this study, it is recommended that:

1. The management of deposit money banks in Nigeria should formulate and uphold a comprehensive credit management strategy and

framework, together with a rigorous credit policy, to reduce non-performing loans and default rates, thereby enhancing their performance levels.

2. Additionally, the administration of Nigerian DMBs should align their loan assets with the characteristics of their deposit obligations. Consequently, savings deposits should be allocated for short-term investments or loans, whereas time (fixed) term deposits should correspond with long-term bonds. A meticulous and thorough evaluation process must be adhered to when extending loans and advances to clients; additionally, credit to individuals should be limited to short-term or, at most, medium-term durations.

3. Considering that the non-performing loan ratio exerts the most significant influence on financial performance relative to other independent variables in the regression models, it is evident that Deposit Money Banks (DMBs) must prioritize their non-performing loan ratio and develop strategies to reduce it to the lowest feasible level.

References

- Abdel-Basset, M., Gunasekaran, M., Mohamed, M., & Chilamkurti, N. (2019). A framework for risk assessment, management and evaluation: Economic tool for quantifying risks in supply chain. *Future Generation Computer Systems*, 90(1), 489-502.
- Abiola, I., & Olausi, A. S. (2014). The impact of credit risk management on performance of commercial banks in Nigeria. *International Journal of Management and Sustainability*, 3(5), 295-306.
- Abobari, C., Naenwi, M., Zukbee, S. A., & Brend, M. D. (2018). Impact of credit management on bank performance in Nigeria. *Equatorial Journal of Finance and Management Sciences*, 3(1)17 – 23.
- Achou, T. F., & Tenguh, N. C. (2008). Bank performance and credit risk management. University of Skoved: School of technology and society.
- Adegbe, F. F., & Otitolaiye, E. D. (2020). Credit risk and financial performance: An empirical study of deposit money banks in Nigeria. *European Journal of Accounting, Auditing and*

- Finance Research, 8(2), 38-58.
- Aigbomian, E., & Akinlosotu, N. T. (2017). Credit risk management and profitability of deposit money banks in Ekpoma, Edo State. *Journal of Economics and Sustainable Development*, 8(3), 222–235.
- Angela, D. (2016). Determinants and differences of domestic and foreign commercial bank profitability. Honors Theses and Capstone. University of New Hampshire. Retrieved on 01/02/2020 from <https://scholars.unh.edu/285MALETE>
- JOURNAL OF ACCOUNTING AND FINANCEA Publication of the Department of Accounting and Finance, Kwara State University, MaleteVol. 2 No. 1, June, 2020 ISSN: 2735-960335
- Alalade, S., Binuyo, O., & Oguntodu, A. (2014). Managing credit risk to optimize banks profitability: A survey of selected banks in Lagos State, Nigeria. *Research Journal of Finance and Accounting*, 5(18), 76-84.
- Bouteille, S., & Coogan-Pushner, D. (2021). *The handbook of credit risk management: originating, assessing, and managing credit exposures*.
- Choudhry, M. (2011). Bank asset –liability and liquidity risk management. London: Palgrave
- Devinaga, R. (2010). Theoretical framework of profitability as applied to commercial banks in Malaysia. *European Journal of Economics, Finance and Administrative Sciences*, 19(19), 75-97.
- Emmanuel, I.M. & Ekwere, R.E. (2022) Credit risk and performance of banks in Nigeria. *International Journal of Research in Finance and Management*, 5(1), 16-24. [8].
- Festus, O.O., & Olaniyan, N. O., (2022) Monetary policy and financial performance of listed money banks in Nigeria. *International journal of accounting and management (JAM)*, 12(3), [11].
- Flamini, V., McDonald, C., & Schumacher (2009). The determinants of commercial bank profitability in Sub-Saharan Africa. IMF working paper WP/09/15, 1–30.
- Gadzo, S.G., Oduro, R., & Asiedu, M. A. (2019). Credit Risk on corporate financial performance: Evidence from listed banks on the Ghana stock exchange. *Journal of Economics and International Finance*. 11(1), 1-14. [12].
- Gestel, T. V., & Baensens, B. (2009). Credit risk management. [E-book] Available through: Oxford Scholarship Online.
- Ghebregiorgis, F., & Atewebhran, A. (2016). Measurement of banks' profitability, risk and efficiency: The case of the commercial bank of Eritrea and housing commerce bank of Eritrea. *African Journal of Business Management*, 10(22), 554-562.
- Greuning, H., & Bratanovic, S. (2007). Analyzing and managing banking risk: A framework for assessing corporate governance and financial risk [Brochure]. Washington, DC, United State of America: The World Bank.
- Gisemba, P. (2010). The Relationship between credit risk management practices and Financial Performance of SACCOs in Kenya. Unpublished MBA Dissertation, University of Nairobi.
- Hambolu, V.O., Omuemu S.O., & AbdulMajeed, A.T. (2022). The impact of credit risk on the profitability of Commercial banks in Nigeria. *FUOYE Journal of Finance and Contemporary Issues*, 3(2), 21-35. [14].
- Imad, K. (2017). The impact of credit risk on the profitability of banks listed on the Palestine exchange. *Research Journal of Finance and Accounting* 8(8), 136 –141.
- Kargi, H. S. (2011). Credit Risk and the Performance of Nigerian Banks. Unpublished master's Thesis, Ahmadu Bello University, Kaduna, Nigeria.
- Kasali, T.A., & Fashanu, F.A. (2020) Nexus between credit management and financial performance in the financial Institution in Nigeria. *Journal of Economics and Finance (IOSR-JEF)*, 11(3), 36-42. [19].
- Kipkirui, E. & Omagwa, J. (2018). Credit Management Practices and Financial Performance of Microfinance Institutions in Nairobi central business district, Kenya. *International Journal of Scientific and Education Research*. 2(4), 64-80. [17].
- Koch, T.W., & MacDonald, S. S. (2009). Bank management. Ohio: Cengage Publisher.
- Kolapo, T. F., Ayeni, R. K., & Oke, M. O. (2012). Credit risk and commercial banks' performance in Nigeria: A panel model approach. *Australian Journal of Business and Management*

- Research, 2(2), 31-38.
- Krugman, P. (2009). The Return of Depression Economics and the Crisis of 2008. W.W. Norton & Company Limited.
- MacmillanChuke, N., & Chinedu, O. (2018). Impact of credit risk management on the performance of selected Nigerian banks. *International Journal of Economics and Financial Issues*, 8(2), 287-297.
- Mercy, N. J., Robert, O., & Patrick, K. (2018). Effects of credit management on the financial performance of deposit taking savings and cooperative societies in Nakuru Town, Kenya. *Journal of Business and Management*, 20(8), 69 -78.
- Mirach, H. (2010). Credit Management: A Case Study of Wegagen Bank Share Company in Tigray Region. College of Business & Economics, Mekelle University,
- Mogga, J.P., Mwambia, F. & Kithinji, M.M. (2018). Effect of credit risk management on the financial performance of commercial banks in Juba city, South Sudan. *International Academic Journal of Economics and Finance*, 3(2), 93-116 [24].
- Nwanna, I. O., & Oguezie, F. C. (2017). Effect of credit management on profitability of deposit money banks in Nigeria. *IIARD International Journal of Banking and Finance Research*, 3(2), 137-160.
- Nyabicha, O.O., (2017) Effect of credit risk management on financial performance of commercial banks listed at the Nairobi securities exchange, Kenya. A thesis submitted to the department of accounting and finance, Kenyatta University. [27].
- Ogboi, C., & Unuafé, O. K. (2013). Impact of credit risk management and capital adequacy on financial performance of commercial banks in Nigeria. *Journal of Emerging Issues in Economics, Finance and Banking*, 2(3), 703-717.
- Pan, R. P. (2012). The impact of credit risk management on financial performance of commercial banks in Nepal. *International Journal of Arts and Commerce*, 1(5), 915.
- Rose, P. S., & Hudgin, S. C. (2008). *Bank Management and Financial Services. (Seventh Edition). Boston: McGraw Hill.*
- Saeed, M., & Zahid, N. (2016). The impact of credit risk on profitability of the commercial banks. *Journal of Business and Financial Affairs*, 5(2), 1-7.
- Sahiti, A., Ahmeti, S., & Aliu, M. (2018). Banking activities in Kosovo and the importance of credit risk management. *Journal of Finance and Banking Studies*, 7(3), 35 -43.
- Sujeewa, K. (2015). Impact of credit risk management on the performance of commercial banks in Sri Lanka. *International Journal of Scientific Research and Innovative Technology*, 2(7), 24-29.
- Taiwo, A. M., & Abayomi, S. T. (2013). Credit management spur high profitability. Evidence from Nigerian banking sector. *Journal of Applied Economics and Business*, 1(1), 46-53.
- Uwalonwa, U., Uwuigbe, O. R., & Oyewo, B. (2015). Credit management and bank performance of listed banks in Nigeria.
- Van Greuning, H., & Brajovic Bratanovic, S. (2003). *Analyzing and Managing Banking Risk a Framework for Assessing Corporate Governance and Risk Management*. 2nd edition, Washington, D. C.: The World Bank.
- Journal of Economics and Sustainable Development, 6(2), 27 -34.